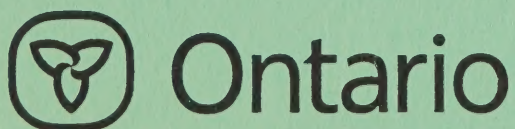


CARON  
EV  
-1996  
F31


GOVERNMENT  
Publications

**FINANCIAL ASSURANCE**  
**(PART XII - ONTARIO**  
**ENVIRONMENTAL PROTECTION ACT)**  
**A GUIDE**

**MAY 1996**



**Ministry of  
Environment  
and Energy**



Digitized by the Internet Archive  
in 2024 with funding from  
University of Toronto

<https://archive.org/details/31761118927367>



ISBN 0-7778-5111-3

**FINANCIAL ASSURANCE**  
**(PART XII - ONTARIO ENVIRONMENTAL PROTECTION ACT)**  
**A GUIDE**

Report prepared by:

Economic Services Branch  
Ontario Ministry of Environment and Energy

MAY 1996  
REPRINTED NOVEMBER 1996



Cette publication technique  
n'est disponible qu'en anglais.

Copyright: Queen's Printer for Ontario, 1996  
This publication may be reproduced for non-commercial purposes  
with appropriate attribution.

PIBS 226-01



# TABLE OF CONTENTS

## ACKNOWLEDGEMENT

The Ministry encourages the distribution of information and strongly supports technology transfer and diffusion. Any person who wishes to republish part or all of this report should apply for permission to do so to the Ontario Ministry of Environment and Energy, Communications Branch, 2nd Floor, 135 St. Clair Avenue West, Toronto, Ontario, M4V 1P5, Canada.

Copyright: Her Majesty the Queen in Right of Ontario as Represented by the Minister of Environment & Energy, 1996. This publication may be reproduced for non-commercial purposes with appropriate attribution.





## TABLE OF CONTENTS

---

1.0	INTRODUCTION .....	1
2.0	PART XII - FINANCIAL ASSURANCE - ENVIRONMENTAL PROTECTION ACT .....	3
3.0	GUIDELINES FOR ADMINISTERING FINANCIAL ASSURANCE .....	7
1.0	Legislative authority .....	8
2.0	Statement of principles .....	8
3.0	Definitions .....	9
4.0	Activities for which financial assurance may be required .....	10
5.0	Conditions when discretionary financial assurance (Section 4.2) should be required .....	13
6.0	Forms of financial assurance .....	14
7.0	Value of the financial assurance required .....	14
8.0	Negotiating financial assurance requirements .....	19
9.0	Procedures for administering cash .....	21
10.0	Procedures for administering irrevocable letters of credit .....	22
11.0	Procedures for administering surety/performance bond agreements .	23
12.0	Procedures for administering the use of eligible government bonds as financial assurance .....	24
13.0	Agreements with terms specified in the approval, order or regulations	25
14.0	Periodic reviews .....	26
15.0	Conditions contributing to a default .....	27
16.0	Responses to a default .....	28
17.0	Non-ministry directors .....	29

## COST ESTIMATION FOR DETERMINING THE AMOUNT OF FINANCIAL ASSURANCE FOR SPECIFIC REGULATORY ACTIVITIES

## APPENDIX B

B-1

### EXAMPLES OF FINANCIAL ASSURANCE INSTRUMENT DOCUMENTS (IRREVOCABLE LETTERS OF CREDIT; SURETY BONDS)

4.0	SUMMARY OF FINANCIAL ASSURANCE ACCOUNTS . . .	31
5.0	CALCULATING FINANCIAL ASSURANCE AMOUNTS FOR A LANDFILL SITE . . . . .	33
6.0	UNIT COSTS OF EMERGENCY AND PLANNED CLOSURE OF LANDFILLS . . . . .	39
	TABLE 1	T-1
	TABLE 2	T-8



## 1.0 INTRODUCTION

---

**Financial Assurance** is authorized under Part XII of the *Environmental Protection Act* and allows provincial officials to require, as a condition of an order or approval, the provision of financial security by regulated parties (persons or groups). Financial assurance would be required either to ensure that pollution control objectives are complied with by a specified deadline or to ensure that funds are available for future cleanup and remediation of landfill sites.

This guide book is intended as a reference for ministry staff and for other interested persons regarding how financial assurance should be administered under different circumstances.

The following items are contained in this guide book:

- Ontario legislation - Part XII, sections 131 to 136 and Section 176 of the *Environmental Protection Act*.
- Guidelines for financial assurance (Procedure F-15-1 in the MOEE Manual of Guidelines and Procedures)
- Summary statistics of active financial assurance accounts.
- A worked example to show how to determine financial assurance for a landfill site.
- Data on landfill closure and post-closure maintenance costs that can be used to develop or confirm cost estimates used to determine financial assurance amounts.

The legal authority to require financial assurance as a condition in a control order or an approval is derived from sections 131 - 134 of the *Environmental Protection Act*. These sections are reproduced in Section 2 below.

Section 3 consists of the guidelines used by ministry officials to administer financial assurances. These guidelines are found in Procedure F-15-1 of the Manual of Procedures and Guidelines for the Ministry of Environment and Energy. The guidelines are also found on Infoshare.

A summary of statistics of active financial assurance accounts for the years 1990, 1993, 1995 and 1996 are shown in Section 4.

Section 5 contains an example of calculations to determine the amount of financial assurance for a private solid waste disposal site. This type of approval accounts for more than half the total number of active financial assurance accounts.

---

Section 6 presents two tables that summarize data on the unit costs of emergency and planned closure and post-closure activities derived from operations in Ontario for which certificates of approval were issued. These costs were all reported during the years 1990 - 1994.

For any further questions, call any regional or district offices of the Ministry of Environment and Energy or the Economic Services Branch of the ministry at 323-4611.



## 2.0 PART XII - FINANCIAL ASSURANCE ENVIRONMENTAL PROTECTION ACT

---

### Definitions

131. In this Part,

"approval" means program approval, certificate of approval or provisional certificate of approval, and includes a permit or approval issued by a Director under the *Ontario Water Resources Act*, but does not include an approval under Part X of this Act; S.O.1993, c. 27. ("authorisation")

"bank" means a bank named in Schedule I or Schedule II to the *Bank Act* (Canada); ("banque")

"environmental measures" means one or more of the measures set out in clauses 132 (1) (a) to (c); ("mesures d'ordre environnemental")

"financial assurance" means one or more of,

- (a) cash, in the amount specified in the approval or order,
- (b) a letter of credit from a bank, in the amount and terms specified in the approval or order,
- (c) negotiable securities issued or guaranteed by the Government of Ontario or the Government of Canada in the amount specified in the approval or order,
- (d) a personal bond accompanied by collateral security, each in the form, terms and amount specified in the approval or order,
- (e) a bond of a guarantee company approved under the *Guarantee Companies Securities Act*, in the form, terms and amount specified in the approval or order,
- (f) a bond of a guarantor, other than a guarantee company, accompanied by collateral security, each in the form, terms and amount specified in the approval or order,
- (g) an agreement, in the form and terms specified in the approval or order, and
- (h) an agreement, in the form and terms prescribed by the regulations; ("garantie financière")

"order" means an order by the Director under this Act, and includes an order, notice, direction, requirement or report made by a Director under the *Ontario Water Resources Act*, but does not include an order under section 136 (order for performance of environmental measures) of this Act; ("arrêté")



"works" means an activity, facility, thing, undertaking or site in respect of which an approval or order is issued. ("travaux") 1986, c. 68, s. 7, *part*.

**Financial assurance for compliance with approval or order**

132.-(1) The Director may include in an approval or order in respect of a works a requirement that the person to whom the approval is issued or the order is directed provide financial assurance to the Crown in right of Ontario for any one or more of,

- (a) the performance of any action specified in the approval or order;
- (b) the provision of alternate water supplies to replace those that the Director has reasonable and probable grounds to believe are or are likely to be contaminated or otherwise interfered with by the works to which the approval or order is related; and
- (c) measures appropriate to prevent adverse effects upon and following the cessation or closing of the works.

**Changes in amount of financial assurance**

(2) A requirement under subsection (1) may provide that the financial assurance may be provided, reduced or released in stages specified in the approval or order.

**Amendment of approval or order**

(3) The Director may amend an approval or order to change a requirement as to financial assurance contained in the approval or order. 1986, c. 68, s. 7, *part*.

**Failure to provide financial assurance**

133.-(1) Failure to provide financial assurance specified in an approval or in accordance with a stage specified in an approval is grounds for revocation of the approval and for an order in writing by the Director prohibiting or restricting the carrying on, operation or use of the works in respect of which the financial assurance is required.

(2) Failure to provide financial assurance specified in an order or in accordance with a stage specified in an order is grounds for an order in writing by the Director prohibiting or restricting the carrying on, operation or use of the works in respect of which the financial assurance is required. 1986, c. 68, s. 7, *part*.

**Return or release of financial assurance**

134.-(1) Upon request, part or all of the financial assurance given in respect of a works may be returned or released pursuant to an order in writing by the Director.

**Grounds for order**

(2) The Director may make an order mentioned in subsection (1) if satisfied that the financial assurance returned or released is not required in respect of the works. 1986, c. 68, s. 7, *part*.

**Continuation of financial assurance**

135. The Director may convert a financial assurance to cash to be held by the Crown to the same purposes as the financial assurance or otherwise realize the financial assurance unless the financial assurance is renewed at least thirty days before it would otherwise expire. 1986, c. 68, s. 7, *part*.

Order for use of financial assurance	136.-(1) In the circumstances set out in subsection (2), the Director by order may require the performance of environmental measures for which the Crown holds financial assurance and may require the use of the financial assurance for the performance of the environmental measures.
Basis for order	(2) The Director may make an order mentioned in subsection (1) if the Director has reasonable and probable ground to believe that any environmental measure required by the approval or order in respect of which the financial assurance was given has not been or will not be carried out in accordance with the requirement.
Parties affected	(3) An order under this section shall be directed to the person to whom the approval or order under section 132 (financial assurance) was issued or directed and to any person that to the knowledge of the Director has provided the financial assurance for or on behalf of the person to whom the approval or order was issued, or shall be directed to the successor or assignee of that person.
Performance	<p>(4) Upon the issuance of an order by the Director under subsection (1), the Crown may,</p> <ul style="list-style-type: none"> <li>(a) use any cash;</li> <li>(b) realize any bond or other form of security, and use the money derived therefrom; and</li> <li>(c) enforce any agreement,</li> </ul> <p>provided or obtained as the financial assurance for the performance of the environmental measures and may carry out the environmental measures. 1986, c. 68, s. 7, <i>part</i>.</p>
Regulations relating to Part XII	176.-(9) The Lieutenant Governor in Council may make regulations relating to Part XII prescribing requirements for financial assurance in respect of the classes of approvals or orders specified in the regulations. 1986; c. 68, s. 11.





### **3.0 GUIDELINES FOR ADMINISTERING FINANCIAL ASSURANCE:**

## **PART XII ENVIRONMENTAL PROTECTION ACT**

**Manual of Guidelines and Procedures, Procedure F-15-1  
Ministry of Environment and Energy**



## 1.0 Legislative authority

Legislative authority for the requirement of financial assurance in association with director's orders and approvals under both the *Environmental Protection Act* (EPA) and the *Ontario Water Resources Act* (OWRA) derives from Part XII (Financial Assurance), sections 131-136, of the *Environmental Protection Act*.

## 2.0 Statement of principles

- 2.1 This procedure specifies how financial assurance requirements are to be administered by the ministry.
- 2.2 Financial assurance under Part XII can only be required as a condition of an order or an approval or by regulation.
- 2.3 Financial assurance is discretionary on the part of the program director. Nevertheless, financial assurance will normally be required as a condition for certain types of orders or approvals listed in Section 4.1. Criteria for deciding whether to require financial assurance for all other types of orders or approvals (as listed in Section 4.2) are given in Section 5.0.
- 2.4 This procedure is intended to ensure that the administration of financial assurance requirements is consistent, equitable and effective.
- 2.5 The procedure addresses the following topics:
  - conditions when financial assurance may be required of the recipients of orders or approvals;
  - determining the amount of financial assurance to be required;
  - the types of eligible financial assurance and the minimum requirements for depositing, accepting and releasing such assurance;
  - review and reporting procedures that must be carried out when financial assurance is in force;
  - conditions of default;
  - responses to a default.



- 2.6 Financial assurance will be required in order to:
- ensure that funds are available to comply with the conditions of an order or approval;
  - assemble funds for decommissioning, cleanup, rehabilitation and perpetual care at future dates.
- 2.7 Financial assurance may not be retained as a penalty.
- 2.8 Financial assurance will not normally be required of municipalities and other public bodies or institutions, for the following reasons:
- they are not subject to bankruptcy and financial insolvency to the same degree as are private companies;
  - municipalities have a permanency of place which prevent them from walking away from local problems;
  - public institutions are generally backed by provincial or federal government resources.
- 2.9 Financial assurance may be required for existing operations as well as new facilities but, in either case, it must be specified as a condition in an order or an approval.
- 2.10 Primary contact with regulated parties will be through the program director. The program director will ensure that other relevant ministry officials, specifically the director of the Finance and Administrative Branch, are informed of specific actions.
- 2.11 Regulated parties which own/operate more than one site subject to financial assurance may request that a single financial assurance account be established to include all such sites.

### 3.0 Definitions

- 3.1 Financial assurance - means one or more of the mechanisms listed in Section 131 of the EPA by which one party guarantees or obtains a guarantee of its performance to another party (such as the government).
- 3.2 Approval - as defined in Section 131 of the EPA and appropriate sections of the OWRA.

- 3.3 Order - as defined in Section 131 of the EPA and appropriate sections of the OWRA.
- 3.4 Control document - A document which is authorized by statute, binding upon the recipient, and directly enforceable by prosecution.
- 3.5 Regulated party - the party, a company or person who, under an approval or an order, is subject to an approval or an abatement requirement and must provide financial assurance.
- 3.6 Guarantor - a third party, such as an insurance company, which will issue an assurance or a surety bond.
- 3.7 Program director - a Ministry of Environment and Energy official who is designated as responsible for developing, issuing and enforcing an order or approval. The *Environmental Protection Act* and the *Ontario Water Resources Act* refers to this official as a "Director". For purposes of Financial Assurance, the official is normally the regional director or the director of the Approvals Branch. Officials Directors employed by local boards of health, regional municipalities and elsewhere outside the Ministry, may also be program directors for purposes of Part VIII of the EPA.
- 3.8 Environmental measures - as defined in Section 131 of the EPA.
- 3.9 Finance and Administration Branch (FAB) - The name of this branch may change from time to time. Reference should be made to the Ministry organization chart for the current name.

#### 4.0 Activities for which financial assurance may be required

- 4.1 Activities for which financial assurance is normally required in every case.
- 4.1.1 Approvals under Part V, EPA
- 4.1.1.1 private landfill sites for which a hearing is required under Section 30 of the EPA; ie. will accept non-hazardous solid industrial, commercial or domestic wastes and which have a life-time capacity of 40,000 cubic metres or more (i.e. 1,500 people);

- 4.1.1.2 private transfer stations, which handle "subject wastes" as defined in Regulation 347, waste processing sites for subject wastes and PCB mobile destruction units;
  - 4.1.1.3 private transfer stations and waste processing sites for other wastes where there is no identified place or practical method for final disposal in Ontario;
  - 4.1.1.4 private waste management (haulage) systems which carry biomedical wastes, PCBs and hazardous subject wastes.
- 4.1.2 Approvals under Part VIII, EPA
- 4.1.2.1 All unclassified, unregulated sewage systems treating commercial or industrial waste water;
  - 4.1.2.2 Private communal sewage systems in the circumstances described in Section 4.1.3.
- 4.1.3 Approvals under sections 52 and 53, OWRA
- 4.1.3.1 Private communal sewage and water works in unorganized areas where there is no agreement with the Ministry of Municipal Affairs for a local government agency (e.g. a local services board or a municipality to be created, or an existing municipality to be expanded) to take over the works in the event of a default;
  - 4.1.3.2 Private communal sewage and water works in organized areas without an agreement with the local government agency to take over the system in a default situation.
- Note: Financial assurance is not meant to take the place of an agreement with a municipal authority. The ministry, at the time of initial approval, will continue to require a municipality or, in unorganized areas, another governmental organization to enter into a responsibility agreement for the long-term operation and maintenance of communal water works, sewage works and sewage systems. However, financial assurance must be provided until such agreements are ratified.



- 4.2 Activities for which financial assurance is **discretionary** for the program director.
  - 4.2.1 Private landfill sites not referred to in Section 4.1.1.1
  - 4.2.2 Other approvals under Part V, EPA
    - 4.2.2.1 reclamation or processing operations;
    - 4.2.2.2 organic waste disposal sites (e.g. canning plant wastes);
    - 4.2.2.3 incineration facilities;
    - 4.2.2.4 private transfer stations and waste processing sites for wastes other than those referred to in 4.1.1.2;
    - 4.2.2.5 PCB storage sites;
    - 4.2.2.6 waste management systems (haulers) which do not handle biomedical wastes, PCBs and hazardous subject wastes.
  - 4.2.3 Approvals under Part VIII, EPA
    - 4.2.3.1 Class 7 sewage systems;
    - 4.2.3.2 all sewage systems serving either industrial, commercial or institutional facilities for which financial assurance is not mandatory as per paragraph 4.1.2.1;
    - 4.2.3.3 Class A sewage systems;
  - 4.2.4 Approvals under Section 53, OWRA
    - 4.2.4.1 industrial and milling activities that generate tailings, ash or other waste materials subject to Section 53, OWRA;
    - 4.2.4.2 any sewage works in which waste materials that are generated by the sewage works, including sludges, are to be disposed of on the site of the sewage works;
    - 4.2.4.3 Any sewage works, or any part thereof, that contain waste materials, such as sludges, that are to remain on the site after decommissioning.

**4.2.5 Air approvals under Section 9, EPA**

4.2.5.1 storage of subject waste materials from air pollution control equipment;

4.2.5.2 Conditional Certificate of Approval requiring upgrading and where there is uncertainty as to whether the equipment will work.

**4.2.6 Water taking permits under Section 34, OWRA**

4.2.6.1 private undertakings which are likely to reduce the quantity or quality of water supplies of neighbours, and where conditions require remedial measures.

**4.2.7 Control and other orders**

4.2.7.1 industrial abatement programs under Section 18, EPA;

4.2.7.2 where an industrial or commercial site which is contaminated with hazardous materials is to be decommissioned;

4.2.7.3 operations which store subject wastes on site under Regulation 347 for more than 90 days.

4.3 The criteria for deciding when to require financial assurance in the discretionary cases are detailed in Section 5, below.

**5.0 Conditions when discretionary financial assurance (Section 4.2) should be required**

5.1 Where a required action, process or task could result in adverse effects or damages to property owners, the public, or individuals who are not employees and for which financial compensation may be required.

5.2 When appropriate regional or approvals staff determine that a facility or operation will require decommissioning, rehabilitation or environmental cleanup measures when it is to be shut down or modified in the future.

5.3 When long term and/or perpetual management or monitoring of an existing or potential pollution or contamination problem is required by an order or an approval.

- 5.4 When there is reason to expect that the regulated party might become insolvent in the future and be unable to complete or comply with the conditions of an order or an approval.
- 5.5 When a regulated party or person has been convicted of violations involving pollution discharges or emissions for the specific or related problems that are being addressed in an order or approval.
- 5.6 When the regulated party has missed deadlines in previous orders or approvals.
- 5.7 When the regulated party receives an extension to a compliance date.
- 5.8 When the operation or waste residuals of the regulated party are judged to be high risk in that the release of a contaminant could cause serious health, environmental or property damage including interference with the operation of private and municipal wells.

## **6.0 Forms of financial assurance**

- 6.1 Forms of financial assurance are described in Section 131 of the EPA. These instruments are to be chosen by the program director and other MOEE staff, in consultation with the regulated party, in accordance with these procedures. Regulations may be made from time to time to require particular types and amounts of financial assurance in specific cases.
- 6.2 Examples of the wording for two types of instruments that can be used are presented in Appendix B.
- 6.3 Forms of financial assurance are described in more detail in sections 9.0, 10.0, 11.0, 12.0 and 13.0 of these procedures.
- 6.4 Liability insurance may also be considered for acceptance as financial assurance under conditions described in Section 13.6.

## **7.0 Value of the financial assurance required**

- 7.1 The value or amount of the financial assurance required will be based on one or more of the following:
  - 7.1.1 the estimated capital cost of each program item, activity, facility or technology, etc. specified in, or required to comply with, an order or approval;



- 7.1.2 the expected operating costs of the relevant program item, activity, etc. (including long-term monitoring, treatment, storage or security) over the required period specified in the order or approval;
- 7.1.3 the quantity of the waste materials being generated, processed, stored or discharged;
- 7.1.4 the estimated costs of cleaning up and disposing of residues of a potential spill;
- 7.1.5 the estimated capital and long-term operating and maintenance costs (including monitoring, treatment, storage or security) of decommissioning a contaminated site or facility.
- 7.2 Where the order or approval indicates that there are several acceptable options or techniques to achieve the specified environmental requirements or objectives, the amount of the financial assurance can be based on the least-cost option or approach.
- 7.3 For each type of order or approval listed in Section 4.0 of these procedures, the proponent, in consultation with ministry staff, should identify program activities, items, projects, etc. that are required by, or must be implemented to comply with, conditions in the order or approval.
- 7.4 Estimates of the capital and other one-time costs and the annual operating and maintenance costs associated with each program activity, facility, etc. are to be generated and provided by the regulated party with reference to Appendix A.
  - 7.4.1 Expected variations in annual operating and maintenance costs over time should be noted.
  - 7.4.2 Specify the total time period or planning period, in years, over which each project, activity, etc. is to be implemented, starting with issuing of order or approval. There is no predetermined maximum time period or planning period for which financial assurance may be required.
  - 7.4.3 Specify the year(s) in which capital/one-time costs are to be incurred and in which annual operation costs will start and finish, counting from the issuing of the order or approval.

- 7.4.4 Tabular schedules of these estimates over the planning period would be most helpful.
- 7.4.5 Where the planning period is four years or more and capital/one-time costs are incurred four years or more from the issuing of the order or approval, future capital/one-time and operation and maintenance costs may be discounted to present values using appropriate formulae and interest rates specified below.
- 7.5 Where activities, projects etc. are to be completed in three years or less:
- 7.5.1 if operating and maintenance costs are not specified in the conditions of an order or approval, the recommended financial assurance is 100 percent of total capital/one-time costs;
- 7.5.2 if operating and maintenance costs are specified in the conditions of an order or approval, then the recommended financial assurance for most situations is 100 percent of total capital/one-time costs plus at least three years of annual operating costs.
- 7.6 Where activities, projects or technologies are to be installed or completed four years or more after the issuing of an order or approval, or if operating costs are to start four or more years after issuing the order or approval, and
- 7.6.1 if operation and maintenance is not specified in conditions of order or approval, recommended financial assurance is either
- 100 percent of the present value of the total capital/one-time costs,
  - or annual payments sufficient to reach the amount of total capital/one time costs by the year in which they are to be incurred.
- N.B. Only cash or eligible government bonds can be accepted for this financial assurance.
- 7.6.2 if operating and maintenance activities over a required finite time period are specified in the conditions of the order or approval, the recommended financial assurance is either

- an initial payment of 100 percent of the present value of total capital/one-time costs, plus 100 percent of the present value of all annual operating and maintenance costs over the planning period,
- or annual payments which will accumulate over time to reach the required sum of total capital/one-time costs plus the present value of the total annual operating and maintenance costs over the planning period.

The intent of this financial assurance is to ensure that there are sufficient funds available to pay all operating costs over the planning period.

N.B. Only cash or eligible government bonds can be accepted for this financial assurance.

7.6.3 The present values of total capital/one-time costs and total annual operating costs (over a finite planning period) are to be computed using the following formula

$$PV = \Sigma(\text{sum of}) [(1/(1+i)^n) \times (FOC_n) + (1/(1+i)^n) \times (FCC_n)]$$

where PV = present value of all costs over the order or approval planning period.

$FOC_n$  = future annual operating and maintenance costs expended in year n.

$FCC_n$  = future capital costs expended in year n.

$i$  = annual interest rate.

$n$  = years designated as 1, 2, etc. up to a pre-specified final year.

7.7 If the order or approval involves future decommissioning or rehabilitation, monitoring, treatment and disposal of effluents or emissions, or perpetual care and security of a site, without having a finite planning period specified, recommended financial assurance for this purpose is 100 percent of the capitalized value of the estimated annual operating and maintenance costs. The capitalized value is to be computed using the following formula:

$$CV_{oc} = \text{annual FOC}/i$$



where  $CV_{oc}$  = capitalized value of operating and maintenance costs in perpetuity.  
 $FOC$  = future annual operating and maintenance costs.  
 $i$  = annual interest rate.

The objective of this financial assurance is to deposit or accumulate an amount that will generate an annual income sufficient to cover these future annual operating and maintenance costs.

- 7.8 The annual interest rate to be used in the formulae noted in sections 7.6 and 7.7 or to calculate annual payments will be a rate consistent with the form of financial assurance chosen and the time period specified in the order or approval. The minimum rate to be used is to be based upon the rate offered by the Province of Ontario Savings Office to its Trillium Account depositors. The maximum rate allowed is to be based on the rate of return for selected Government of Canada benchmark bond yields, as published in the journal, **Bank of Canada Review**.
- 7.9 For estimating future capital/one-time costs and annual operating and maintenance costs, annual inflation rates used should be based on appropriate price indices such as the series entitled Machinery and Equipment and Non-residential Construction found in the **Bank of Canada Review**.
- 7.10 Further guidance for estimating the costs associated with different types of regulatory activities and the recommended amounts of financial assurance to be required are found in Appendix A.
- 7.11 Estimating relevant costs for financial assurance requirements.
- 7.11.1 The regulated party, who is either an applicant for an approval or the recipient of an order, is responsible for providing cost estimates for the relevant activities that are proposed in response to conditions and the respective orders or approvals. In addition, explanations of how costs were estimated as well as references and sources of relevant estimation procedures should be provided. Reference should be made to Appendix A.
- 7.11.2 If no estimates of the relevant capital and/or operating costs are provided by the regulated party, MOEE staff should generate relevant cost estimates with reference to Appendix A.

- 7.11.3 In any event, estimates provided by the regulated party should be reviewed by MOEE staff where possible.
- 7.11.4 If there is a disagreement between the cost estimates of the MOEE and those of the regulated party, details of estimation procedures from each participant should be exchanged with a view to reaching agreement through negotiation. Compliance procedure F-2 may be invoked to produce a new set of cost estimates to be used in determining financial assurance.
- 7.12 Where an approval or order involving future decommissioning, rehabilitating, monitoring and treatment of effluents or emissions, or perpetual care and security requires the accumulation of financial assurance in a fund over time, the payments, or the formula for calculating payments into the fund, shall be established in accordance with any relevant regulations or procedures for determining the amounts and should be specified in the order or approval.
- 7.13 The order or approval should provide for the periodic review of financial assurance provisions in order to ensure that adequate funds are available for the specified requirements.
- 7.14 Where marketable securities and/or other negotiable instruments not covered by Section 12 of these procedures are accepted as financial assurance, the market value of the securities taken should be at least 20 percent in excess of the agreed to amount of financial assurance. This premium is intended to offset the need to obtain additional financial assurance if the market value of the securities declines.
- 7.15 If a regulated party asks to establish a single financial assurance account to include more than one site, consideration may be given to this request but the minimum amount of financial assurance required should be equal to the recommended amount of financial assurance for the site with the highest total compliance costs.

## **8.0 Negotiating financial assurance requirements**

- 8.1 Financial assurance agreements and/or requirements for specific polluters may be developed by program directors or their designates in the following MOEE branches:
  - 8.1.1 the regional branches;
  - 8.1.2 Environmental Approvals Branch.

- 8.2 Ministry personnel noted in Section 8.1 may solicit advice from staff from the following divisions/branches:
- 8.2.1 The Economic Services Branch
  - 8.2.2 The Legal Services Branch
  - 8.2.3 Finance and Administration Branch
  - 8.2.4 Environmental Services and Standards Division.
- 8.3 Where negotiations are to take place between the ministry and the regulated party, meetings and other direct contacts with the regulated party should be arranged by or through the program director.
- 8.4 If the regulated party or some other interested party claims that provision of the financial assurance will cause unemployment or undue financial hardship, an economic or financial analysis will be carried out in accordance with Guideline F-14 of the Manual of Guidelines and Procedures.
- 8.5 If a party proposing an undertaking asks to establish a single financial assurance account to include more than one site, the program director may do so but should obtain concurrence with divisions and branches listed in Section 8.2 as well as the Environmental Approvals Branch and the directors of regions where each site or facility is located.
- 8.6 Procedures for administering the following forms of financial assurance are presented in the subsequent sections:
- 8.5.1 cash (See Section 9 below),
  - 8.5.2 irrevocable letters of credit (See Section 10 below),
  - 8.5.3 surety/performance bonds (See Section 11 below),
  - 8.5.4 Government of Canada or provincial bonds (See Section 12 below),
  - 8.5.5 agreements as required by an approval, order or regulation (See Section 13 below).
  - 8.5.6 liability insurance (see Section 13 below).



**9.0 Procedures for administering cash**

- 9.1 Cheques made out to the Minister of Finance should be submitted to the director of the Finance and Administration Branch (FAB) of the Ministry of Environment and Energy.
- 9.2 The cheque will then be deposited into an interest-bearing trust fund within the Consolidated Revenue Fund (CRF) in accordance with any procedures and requirements of the Ministry of Finance.
- 9.3 The interest credited to the trust fund shall be at the rate determined in accordance with paragraph 7.8 of these procedures and may be specified by Order in Council.
- 9.4 If cash sums are to be built up through payments over time, payments may be based on a per-unit price (e.g. \$ per tonne of waste) or an amortization payment calculated to accumulate to a total amount by a specific time in accordance with Section 7.6.2 of these procedures.
- 9.5 Conditions in an order or approval should specify a sequence of events to ensure that financial assurance is posted before the proposed facilities or activities begin operation. For example, a certificate of approval for the establishment of a new waste disposal site could specify that the site may not open or operate until financial assurance has been received by the director of the FAB who will then notify the program director. If an uncertified cheque is given, the approval should state that it does not take effect until the cheque has cleared the bank.
- 9.6 Applications for refunds are sent initially to the program director who then forwards them to the director of the FAB, if approved.
- 9.7 Payments from these trust funds for any reason shall be requested by the program director, arranged by the director, FAB and authorized by other MOEE officials having appropriate authority.
- 9.8 The FAB shall maintain records of all trust funds and issue reports regularly as required by central agencies and Ministry management. Reports on each account should include, at minimum, the following:
- payments into and out of each account
  - accrued interest
  - opening and closing balances

(See also Section 14.3)

## 10.0 Procedures for administering irrevocable letters of credit

- 10.1 Normally, irrevocable letters of credit should **not** be accepted as financial assurance where growth in funds over time is expected or required.
- 10.2 Only irrevocable letters of credit from financial institutions empowered to issue such instruments with business offices in Ontario may be accepted. A list of such institutions may be obtained from the FAB or from the Ministry of Finance.
- 10.3 Program Directors should ensure that **signed originals** of irrevocable letters of credit and supporting documents are delivered to the FAB for safekeeping. **Copies** should be kept in the files of MOEE district offices, regional offices and/or the Approvals Branch.
- 10.4 A letter of credit will normally specify an expiry date.
- 10.5 Where security is required for a period longer than the expiry date of the letter of credit, the letter of credit should state that it will be renewed automatically.
- 10.6 The condition in the approval or the order which requires financial assurance should provide a renewable letter of credit stating that the issuing bank must give notice to the Crown, at least 60 days before the expiry date, that the letter of credit will not be renewed. An irrevocable letter of credit may not be renewed if the Crown advises the bank in writing that renewal is not required.
- 10.7 If notice of intent not to renew a letter of credit is given by the bank, alternative security satisfactory to the program director and the director, FAB, must be posted at least 30 days before the expiry date.
- 10.8 If alternative financial assurance is not posted as provided in Section 10.6 or notice not to renew a letter of credit is given with no alternative security posted, the existing letter of credit is to be called and the proceeds are to be administered as a cash guarantee as set out in Section 9 of these procedures.
- 10.9 Any approval or order should provide that, where non-cash assurance (e.g. letter of credit, surety bonds, agreements, etc.) is provided and appropriate arrangements are not made for its renewal or replacement, then cash assurance shall be immediately posted in lieu of the non-cash instrument (see also Section 15.5).

- 10.10 The FAB shall maintain records of all letters of credit and prepare reports semi-annually, or more frequently, as required by central agencies and requested by the Ministry (see also Section 14.3).
  - 10.11 The program director is to review FAB reports on letters of credit .
  - 10.12 The program director must instruct the director of the FAB whether or not to "call" (demand payment from the bank) expiring letters of credit if they are not renewed. The program director and director, FAB, or their designates, should co-ordinate any actions to call letters of credit.
  - 10.13 As obligations under an order or approval become fulfilled and, at the request of the regulated party, the program director will notify the bank by letter (with a copy sent to the director of the FAB) as to the status of the obligation; e.g. whether the amount of the letter of credit is to be reduced, or that the letter of credit is to be released. If it is to be released, the original letter of credit and any required supporting documents are to be returned to the bank.
  - 10.14 Drawings on letters of credit, payments into the Consolidated Revenue Fund, reductions or release in letters of credit are to be authorized by the program director and the director of the FAB, with further authorization obtained as necessary. In the absence of any director, an executive director or an associate or Assistant Deputy Minister can authorize action.
  - 10.15 The regulated party is responsible for all bank fees and charges associated with the letter of credit.
- 11.0 Procedures for administering surety/performance bond agreements
- 11.1 Surety and performance bonds consist of agreements or contracts among the Guarantor, the regulated party, and the Crown and are to be negotiated by the personnel specified in Sections 8.1 and 8.2. Advice may be obtained from the Insurance and Risk Management Section of the General Services Branch of the Management Board of Cabinet and the Ontario Insurance Commission in the Ministry of Finance (see page 19).
  - 11.2 Program Directors should ensure that **signed originals** of surety or performance bonds and supporting documents are delivered to the FAB for safekeeping. **Copies** should be kept in the files of MOEE district offices, regional offices and/or the Approvals Branch.



- 11.3 The FAB shall keep records of these documents and provide reports on them annually, or more frequently, as required by central agencies and ministry management (see also Section 14.3).
  - 11.4 Where surety bonds specify an expiry date, the program director should ensure that sufficient time is given to the life span of the surety bond to complete all requirements of the order or approval.
  - 11.5 Where security is required after the expiry date of the surety bond, the program director must notify the Guarantor, the regulated party and the director of the FAB. Failure to renew the surety bond, or provide a new form of financial assurance, may be cause for the program director to revoke the approval or enforce the order.
  - 11.6 The regulated party is responsible for all fees and charges involved in establishing the bond or other agreement.
- 12.0 Procedures for administering the use of eligible government bonds as financial assurance**
- 12.1 In this section, bonds are debt instruments issued or guaranteed by the Government of Canada or a provincial government and should be distinguished from surety or performance bonds.
  - 12.2 Bonds used as a financial assurance should have a maturity date not over three years from the date on which they are deposited.
  - 12.3 Bonds must be in bearer form or they must be transferred to the Government of Ontario. Consequently, Canada Savings Bonds cannot be used as financial assurance.
  - 12.4 Bonds should be delivered to the FAB for safe keeping.
  - 12.5 The FAB is to keep records of bonds that are held and report on them annually, or more frequently, as required by central agencies and ministry management (see also Section 14.3).
  - 12.6 The FAB should take steps to monitor the value of the bonds quarterly, or more frequently if necessary, and report to the program director if the value falls below the required value of the financial assurance.

12.7 If the value of the bonds on deposit falls to a level of less than 85 percent of the required value of the financial assurance, the director of the FAB is to inform the program director and the regulated party that additional security must be provided.

12.8 The program director, in conjunction with the FAB, may make arrangements with persons posting bonds to accept substitute bonds as security. If no other arrangements are made and a bond matures or interest payments are received, the proceeds shall be deposited and administered as a cash guarantee as described in Section 9 of these procedures.

### 13.0 Agreements with terms specified in the approval, order or regulations

13.1 Agreements or contracts for financial assurance may be required by a term or condition of an approval or an order.

13.2 The wording of the agreement may be negotiated in the course of developing the approval or the order.

13.3 Copies of the agreement and the approval or order should be filed with the FAB for safekeeping and reference.

13.4 The FAB shall keep records of these agreements and provide reports on them annually, or more frequently, as required by central agencies and ministry management (see also Section 14.3).

13.5 Where the agreement provides for holding of securities by a third party, the relevant provisions of the other sections of these procedures shall apply. For example, Section 12.4 describes how government bonds are to be held.

13.6 Liability insurance may be considered as financial assurance. All the following conditions must be met in order to accept an environmental liability insurance policy in lieu of financial assurance:

13.6.1 A certificate is provided by the insurance company which states that the liability insurance policy will pay spills cleanup costs, the costs of other activities/conditions required by the certificate of approval and any costs incurred as a result of failing to comply with such conditions;

- 13.6.2 The policy requires no deductible; if it does, it must be acceptable to the ministry program director.
  - 13.6.3 The policy should have an option for extending coverage for three years or longer following termination of operations covered by the insurance policy.
  - 13.6.4 Should the insurance carrier decide to cancel the policy, for any reason, including non-payment of premium, the insurer must give the policy holder and the ministry program director at least six months notice of intent to cancel.
- 13.7 Advice and guidance may be sought from the Insurance and Risk Management Section of the Management Board of Cabinet and/or from the Ontario Insurance Commission in the Ministry of Finance.

#### 14.0 Periodic reviews

- 14.1 In addition to the reporting and reviews specified in previous paragraphs, the following types of review of each financial assurance should be undertaken as often as is necessary:
- 14.1.1 The FAB should make inquiries at least once a year as to the status and solvency of the persons and institutions that provide financial assurance to the Superintendent of Deposit Institutions or the Superintendent of Insurance in the Ministry of Finance or to the Canadian Inspector General of Banks.
  - 14.1.2 The amount of the financial assurance should be reviewed by the program director to ensure that the amount of financial assurance is sufficient to cover any increases in expected capital and/or operating costs or other program requirements (see Section 7.0).
  - 14.1.3 Where conditions in an order or approval do not specify the return or cancellation in whole or in part of the financial assurance, the periodic review should determine whether the financial assurance should be returned in whole or in part.
- 14.2 The use of government bonds and debt instruments as assurance for a period longer than three years is not encouraged because the value of these instruments could fluctuate according to economic conditions. If bonds are used, it will be necessary to monitor the value of the instrument, to



compare this value against the expected amount of money that will be required in the future for decommissioning or cleanup and to require the deposit of additional assurance as necessary.

- 14.3 For each order or approval that has a financial assurance requirement, at least a copy of the following is to be sent to the FAB for retention and reference:

- the front page of the order or approval;
- the signature page or pages;
- the pages containing all assurance provisions and requirements.

## 15.0 Conditions contributing to a default

- 15.1 Specific conditions contributing to a default should be clearly specified in the conditions of the order or approval. These conditions should include one or more of the following:

15.1.1 The regulated party misses two successive deadlines in his/her compliance schedule;

15.1.2 After one half ( $\frac{1}{2}$ ) of the time allotted to the implementation of the environmental measure has expired and the regulated party can provide no evidence (ie. work orders, invoices, inspection reports from MOEE staff) that steps are in progress to comply with the conditions of the order or approval;

15.1.3 The length of time a site or facility stays closed on a temporary basis before it must commence closure or permanent rehabilitation exceeds the time specified in the order or approval.

- 15.2 Any violation of a specific order or approval (including any other order or statute) can be deemed to be a default.

- 15.3 The following occurrences should trigger the conversion of a documentary non-cash financial assurance into cash or a more secure form of documentary financial assurance. For example:

- 15.3.1 Notice is received of proposed cancellation or non-renewal of a letter of credit or of some other form of financial assurance and a satisfactory alternative form of assurance has not been arranged (sufficiently) before the cancellation of expiry of the existing financial assurance.
- 15.3.2 Notice is received of the impending insolvency of the regulated party or the surety.
- 15.4 Documentation which specifies the circumstances of the default must be prepared by the program director within two weeks after determination of a default. Assistance may be obtained from staff in the Legal Services Branch, the Investigations and Enforcement Branch and the Economic Services Branch. Copies of such documentation are to be sent to the director, FAB, the Assistant Deputy Minister for the division in which the program director is located and the regulated party.
- 15.5 The Investigations and Enforcement Branch must be advised of any failure to deposit the required financial assurance or of premature expiry of a financial assurance where satisfactory alternative arrangements have not been made, or of any other condition of default which involves serving notice on the regulated party.
- 15.6 Except in emergency situations, communication should be made to the regulated party at least six weeks prior to taking the steps outlined in Section 16. The agency (e.g. bank or surety company) should also be notified about an impending default.

## **16.0 Responses to a default**

- 16.1 It is presumed that the regulated party has been given adequate notice of the conditions of the default together with opportunities to rectify these deficiencies.
- 16.2 If financial assurance has been given in the form of cash, bonds, a letter of credit, or similar security, all or part of the financial assurance amount may be claimed by the program director, with co-operation from the director, FAB, with the appropriate authorization. Where necessary the proceeds may be transferred to a special account in the Consolidated Revenue Fund. Any interest that is earned on this money will accrue to the amount of the financial assurance.

- 16.3 Where financial assurance or its proceeds are to be used to complete the action, facility or environmental measure as specified in the order or approval, a director's order is required to authorize such expenditure. This order can be appealed.
- 16.4 The order or approval which requires posting of the financial assurance should normally specify as conditions the purposes to which the financial assurance can be applied.
- 16.5 If the financial assurance given is a surety or performance bond, or other type of agreement that is not readily convertible to cash, the provisions of the agreement that is part of a surety or performance bond will apply. This may include the ministry hiring a different contractor to carry out or complete the required works.
- 16.6 Where facilities or sites are abandoned, financial assurance will be expended on required decommissioning, cleanup and other necessary tasks.
- 16.7 Where it is not feasible to utilize outside contractors to complete required environmental works or measures as required by the order or the approval (e.g. where access cannot be gained to an abatement facility or where compliance requires a process change within a manufacturing plant), the ministry shall realize on the assurance and withhold any funds until compliance is achieved. In the meantime, other enforcement actions and sanctions (e.g. prosecutions) may be applied.
- 16.8 The program director or designated staff must document steps leading to the default and steps taken to call, obtain and utilize, the financial assurance.

#### 17.0 Non-ministry directors

Where a program director is employed in a local board of health or regional municipality or elsewhere outside the Ministry of Environment and Energy, the program director should contact a ministry regional office or the ministry Legal Services Branch to develop financial assurance requirements. This consultation will ensure consistency in application and the wording of financial assurance forms and conditions. The requisite notification and copies of relevant documents should be sent to the FAB as specified in Section 13 of these procedures.



## **APPENDIX A**

### **COST ESTIMATION FOR DETERMINING THE AMOUNT OF FINANCIAL ASSURANCE FOR SPECIFIC REGULATORY ACTIVITIES**



## Introduction

The cost components and procedures outlined in this appendix are intended to help stakeholders and MOEE staff estimate the relevant costs associated with specific program activities, projects, facilities, technologies, etc. which may be required to comply with each type of regulatory activity identified in Section 4 of the procedures.

Recommended amounts of financial assurance based on these cost estimates are given for some types of regulatory activities. Further guidance for setting the amount of financial assurance is found in Section 7.0 of these procedures.

Two key types of costs are to be estimated for each program activity, project, facility, technology, etc.

- **Capital/one-time costs:** Costs associated with purchase of equipment, installation of equipment, construction of buildings and other improvements, one-time consultant services, architect services, laboratory expenses, etc.
- **Recurring (annual) expenses and costs:** Costs for operation and maintenance, labour, materials, ongoing contract services, monitoring, etc.; expressed on an annual basis.

This appendix is organized in the same order as the types of regulatory activities listed in Section 4.0 of the procedures.

Users of these procedures are cautioned against double counting when developing cost estimates.

Users are also reminded that the purpose of financial assurance is to:

- ensure that sufficient funds are available to comply with the conditions of an order or approval;
- assemble sufficient funds for decommissioning, cleanup, rehabilitation and perpetual care at future dates.

Financial assurance may not be retained as a penalty.

Financial assurance is not normally required of municipalities and other public bodies or institutions.



## A.1 Private landfill and waste disposal sites

### A.1.1 Financial assurance will be required to cover such costs as:

- emergency close-out (e.g. before the site capacity is reached);
- contingency programs for the treatment of leachate, hydrogeological studies or control of methane gas, if necessary;
- a planned close-out whether or not the site reaches approved capacity;
- long-term ("perpetual") monitoring and maintenance of site.

### A.1.2 The cost of an emergency close-out

- A.1.2.1 Identify and determine the amount of fill and cover, hauling, grading and revegetation required at the site.
- A.1.2.2 Estimate the relevant costs of each of these activities and convert these costs to a per-hectare or a per-acre basis.
- A.1.2.3 As only a part of the landfill capacity will likely be used up, only that portion of the close-out costs associated with emergency closure at the particular site would have to be incurred.
- A.1.2.4 Where A.1.2.3 applies, a maximum of 50 percent of the close-out costs for the entire site should be collected as financial assurance for emergency close-out.

### A.1.3 The cost of a contingency program

- A.1.3.1 Estimate the costs of the facilities specified in the contingency program, e.g. interceptors, trenching and treatment equipment.
- A.1.3.2 The annual operating and maintenance costs of these facilities should be estimated.
- A.1.3.3 The amount of financial assurance should equal the estimated one-time capital costs of the facilities required for the program plus at least one year's operating costs. The interest earned on these deposits can be used to build up the financial assurance to an amount sufficient to generate annual income that will cover the estimated annual operating costs.

#### A.1.4 The cost of the close-out plan

- A.1.4.1 Determine the amount of fill and cover, grading, revegetation and facilities such as purge wells and treatment equipment that will be required for the site.
- A.1.4.2 Estimate the one-time capital costs of the plan.
- A.1.4.3 Estimate the annual operating and maintenance activities that will be required for the site and their costs.
- A.1.4.4 The amount of financial assurance should be equal to the estimates of one-time capital costs plus an amount that will build up the financial assurance to an amount that will generate an annual income sufficient to cover the estimated annual operating and maintenance costs for the contaminating lifespan (i.e. "...the time period during which the landfill will produce contaminants at levels that could have an unacceptable impact if they were to be discharged into the surrounding environment of the landfill") unless a shorter period can be justified. Where no finite planning period or contaminating lifespan is specified for maintenance and monitoring, the capitalized value of the required annual operating and maintenance costs should be the basis for determining the amount of financial assurance.
- A.1.4.5 If the provision of financial assurance is structured to accumulate a fund over time the amount required should normally be fully accumulated at least five years prior to closing.

#### A.1.5 The cost of long-term monitoring

- A.1.5.1 Determine the number of locations to be monitored for surface and groundwater and landfill gas;
- A.1.5.2 Determine the parameters to be analyzed and the frequency of collecting samples for analysis;
- A.1.5.3 The amount of financial assurance should be at least equal to the estimated costs of installing the monitoring facilities that are not to be provided for operational purposes and the annual cost of collecting samples, analyzing samples, and producing a report by a consultant to present an interpretative analysis of the results for the contaminating lifespan, unless a shorter period can be justified. As in Section A.1.4.4, if no finite planning period or

contaminating lifespan is specified for maintenance and monitoring, the capitalized value of the required annual operating and maintenance costs should be the basis for determining the amount of financial assurance.

## A.2 Private transfer stations and waste processing sites

A.2.1 The key considerations in determining the amount of financial assurance for these facilities are:

- the equipment and facilities on the site;
- the total volume of waste on site;
- the nature of the waste/material on site;
- the extent of soil contamination at the site.

A.2.2 Financial assurance should cover the costs of:

A.2.2.1 hauling, treating and disposing of the waste materials. N.B. A detailed cost estimate of these activities is preferable to a rule of thumb figure such as the "\$1 per litre of waste generated";

A.2.2.2 dismantling and disposal of equipment or other facilities;

A.2.2.3 excavation and disposal of contaminated soil, if necessary;

A.2.2.4 site rehabilitation.

A.2.3 These are all one-time costs which could be incurred at any time after the certificate of approval has been issued. Therefore, financial assurance should be sufficient to cover these costs from the outset of the activity.

A.2.4 Where environmental monitoring and reporting over a period of five years or longer are required for these establishments, such costs should be estimated and included in the amount of financial assurance.

A.2.5 If the transfer station or processing facility will handle waste materials for which there is no identified place or practical method of disposal in



Ontario, an approved method of disposal must be identified and the costs of this method estimated. These costs should be included in the financial assurance required from the outset of the activity.

### **A.3 Private waste management (haulage) systems**

- A.3.1 The purpose of financial assurance for this activity is to provide money for cleanup of spills and for the cleanup of abandoned vehicles and storage areas.
- A.3.2 There are two main types of hauler operations for which certificates of approval are issued: subject wastes and solid, non-hazardous wastes.
- A.3.3 As of the Fall of 1993, subject waste haulers are being required to purchase at least \$1 million in liability insurance.
- A.3.4 An alternative procedure for calculating the amount of financial assurance should be based on the relative hazard posed by the material being hauled, the accident record of the applicant and other similar carriers and the likely costs of cleanup of either a spill or the applicant's trucks or storage facilities where there is no liability insurance or financial assurance in place to cover the expense.

### **A.4 Private communal sewage systems, sewage works or water works without an agreement that a government agency will take over the system**

- A.4.1 Information on the specifications of the facility should be provided so that MOEE personnel may verify capital and operating cost estimates or prepare their own.
- A.4.2 The amount of financial assurance required is initially to cover three years of operating costs plus 15 percent of the capital costs, which would provide funds for upgrading or cleanup that may be required after a default and for an interim takeover until the municipal or other local organization takes over operations or replaces the works.

### **A.5 Approvals under Part V, EPA**

- A.5.1 These types of facilities include recycling operations, incinerators, PCB storage sites, organic waste disposal sites and waste management systems (e.g. haulers) which do not handle subject wastes. Financial assurance is discretionary for these operations.

- A.5.2 The procedures for calculating the amount of financial assurance required for these types of facilities will be the same as those defined for similar types of facilities described in Sections A.1 (private landfill and waste disposal sites), A.2 (private transfer stations and waste processing sites), or A.3 (private waste management [haulage] systems).
- A.5.3 As experience and data are obtained, revised procedures will be developed for some activities or facilities.

## **A.6 Approvals under Part VIII, EPA**

- A.6.1 The amounts of financial assurance that may be required for these facilities (e.g. sewage holding lagoons and certain communal sewage systems) must cover any expected costs of removal of sewage and sludge or their continued interim operation in the event of a default.
- A.6.2 The cost components to estimate for Class 7 sewage systems are found in Section A.7, below.

## **A.7 Approvals for industrial and milling activities that generate tailings, ash or other waste materials subject to Section 53, OWRA**

- A.7.1 Financial assurance may be required to finance site closure and rehabilitation of tailings or other waste material storage areas. Financial assurance should be based on one-time capital costs plus funds for long-term (perpetual) maintenance and care.
- A.7.2 If the regulated party is a mining company, a mining plan (which projects production rates, ore-body lifespan and required tailings area) and a closure plan (which details rehabilitation and revegetation to be undertaken) are to be supplied with the application. Cost estimates associated with the closure plan should also be submitted.
- A.7.3 The cost of environmentally acceptable mill tailings management includes:
  - A.7.3.1 site preparation (including cutting timber from the tailings area, grading and containment works);
  - A.7.3.2 cover (in some areas) and grading of tailings area;
  - A.7.3.3 revegetation;

A.7.3.4 long-term monitoring and maintenance of dams and treatment facilities.

A.7.4 The amount of financial assurance required should include the capital costs of closure and rehabilitation which will be incurred if the mine or milling operation closes prematurely plus an annual payment that would generate sufficient funds in the future to pay for closure, rehabilitation and long-term maintenance.

A.7.5 The quantity or area of tailings that are generated each year should be reported so that sufficient funds can be accumulated for closure if the mine is closed prematurely.

**A.8 Approvals for operations which discharge into surface waters subject to Section 53, OWRA or to groundwaters subject to Part VIII, EPA.**

A.8.1 Financial assurance may be required to ensure that conditions on a certificate of approval are complied with on time.

A.8.2 Cost estimates of the required abatement or preventative systems and activities should be provided by the regulated party. If such estimates are not submitted, compliance guideline F-2 of the Ministry of the Environment and Energy may be invoked to generate these estimates.

A.8.3 Financial assurance would normally be equal to 100 percent of the capital costs of implementing the required abatement or preventative systems. If the program is to be phased in over four or more years, the recommended amount of financial assurance is equal to future capital/one-time and operation and maintenance costs discounted to present values using appropriate formulae and interest rates.

**A.9 Air approvals under Section 9, EPA**

A.9.1 Financial assurance should cover the costs of collection, storage and disposal of toxic or hazardous waste materials from air pollution control equipment (see Section A.1 and A.2).

A.9.2 Where a conditional certificate of approval is issued and there is uncertainty as to whether the new equipment will work, financial assurance should be sufficient to cover the cost of replacing the equipment with control equipment known to control the emissions in question to an acceptable degree.



**A.10 Water taking permit under Section 34, OWRA**

A.10.1 The amount of financial assurance should be equal to the cost of providing alternative water supplied to those parties who become affected by the activity of the regulated party under the permit. If the most suitable alternative supply is a new well or a pipeline to those persons affected, the financial assurance should be based on the one-time capital costs. If the most suitable alternative is water delivery, whether temporary or long-term, the amount of financial assurance should be sufficient to cover these cost as long as is necessary.

**A.11 Industrial abatement programs under Section 18, EPA**

A.11.1 Cost estimates of the required abatement or preventative systems should be provided by the regulated party. If such estimates are not forthcoming, or if Ministry staff have reason to believe that the estimates understate the true costs of the project, compliance guideline F-2 of the Ministry of the Environment and Energy may be invoked.

A.11.2 Financial assurance for these programs would normally be equal to the capital costs of the required abatement or preventative systems. If the program is to be phased in over three or more years, the amount of financial assurance required in any one year need only be equal to the capital costs of projects to be completed during the current and the year immediately following.

**A.12 Decommissioning of contaminated industrial or commercial sites**

A.12.1 The same types of activities and costs identified and discussed in Section A.2 may be applicable for decommissioning contaminated sites.

A.12.2 The cost estimates on which to base financial assurance commitments may be the minimum expenses needed to bring the site up to standards or guidelines that may be issued from time to time by the Ministry of Environment and Energy.

**A.13 Operations which store subject wastes under Regulation 347**

A.13.1 See relevant information in Section A.22

## **APPENDIX B**

### **EXAMPLES OF FINANCIAL ASSURANCE INSTRUMENT DOCUMENTS**





**N.B.** The following documents are presented as examples only and are not required forms for financial assurance. However, if forms provided by issuing institutions (e.g. banks, surety companies) are presented by approval applicants or recipients of orders, these forms should be reviewed by ministry legal, technical and administration staff to ensure that provisions of Part XII of the Act, conditions of the order or approval and the intent of the procedures are preserved and implemented.



## EXAMPLE OF A SURETY BOND

N.B. This an example of a surety bond for a waste disposal certificate of approval. With suitable changes, this form can be adapted for other environmental activities and requirements.

### DRAFT FORM OF BOND

(To be typed on financial institution's Letterhead)

*[ENVIRONMENTAL PROTECTION ACT]*

BOND NO: \_\_\_\_\_

APPROVAL NO: \_\_\_\_\_ AMOUNT: \$ \_\_\_\_\_

Know all men by these presents that we, \_\_\_\_\_

(the "Principal")

and \_\_\_\_\_

(the "Surety")

are jointly and severally bound to Her Majesty the Queen in Right of Ontario as Represented by the Minister of Environment & Energy (the "Obligee"), in the sum of [spell out amount in words] dollars, lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents;

WHEREAS the Principal is desirous of obtaining [Certificate of Approval/Provisional Certificate of Approval] from the Ministry of Environment and Energy to operate on [location of disposal site];

WHEREAS the Principal must furnish a financial assurance to the Obligee pursuant to Part XII of the *Environmental Protection Act* with respect to the [describe waste disposal sites];

In the event there is a default by the Principal or its heirs, executors, administrators, successors or assigns in carrying out any of their obligations under the [*Environmental Protection Act*] with respect to [waste disposal site], the aforesaid sum shall be paid forthwith on written demand to the Minister of Finance to be held for purposes of Part XII of the *Environmental Protection Act* and the [waste disposal site] and the Principal and



the Surety each consent to the Crown obtaining, on written notice, summary judgements for the full amount secured hereunder if payment is not made forthwith upon demand;

The condition of the above obligation is that if the Principal shall well and truly, in all respects duly fulfil, execute and observe all terms and conditions and requirements of the *Environmental Protection Act* then this obligation shall be void and of no effect but otherwise shall be and remain in full force, virtue and effect.

Nevertheless if the Surety at any time gives TWO (2) calendar months' notice in writing to the Principal and to the Oblige of the Surety's intention to put an end to the Suretyship hereby entered into, then this bond and all accruing responsibility thereunder shall from and after the last day of such two calendar months aforesaid cease and determine except insofar as the Principal has made default prior to the said last day of such period.

Nevertheless, the obligations of the Principal or the Surety for this bond or renewal will be limited to the amount stated above or the amount stated on the renewal certificate provided that the amount stated on a renewal certificate shall not be less than the amount stated above or on the most recent renewal certificate unless the Director under the *Environmental Protection Act* has consented to a lower amount.

This bond will be valid for the term from [Day] day of [Month], 199[year] to [Day] day of [Month], 199[year] and shall be automatically renewed without further documentation from year to year thereafter unless terminated as aforesaid provided that the Surety may, if it wishes, issue certificates evidencing such renewal.

Any notice hereunder may be given,

- (a) in the case of the Oblige by prepaid mail to:

Ministry of Environment and Energy  
[Regional Director's address]

- (b) in the case of the Principal by prepaid mail to:

[Principal's Name]  
[Principal's Address]

- (c) in the case of the Surety by delivery to or by prepaid mail to:

[Surety's Name]  
[Surety's Address (should be located in Metropolitan Toronto, must be in Ontario)]

or such other address as the recipient has, from time to time, given the sender, written notice of change of address, provided such written notice specifies it is given with respect

to [waste disposal site] and this Bond and the Surety may not give notice specifying an address outside of Metropolitan Toronto or the Municipality specified in (c) without the written consent of the Obligee.

Any notice by the Obligee may be signed by the Director of the [Name of Region] Region of the Ministry of Environment and Energy, the Assistant Deputy Minister of the Corporate Management Division of the Ministry of Environment and Energy, the Deputy Minister of Environment and Energy or such other person as the Deputy Minister of Environment and Energy or Minister of Environment and Energy appoints in writing for the purpose.

The Surety acknowledges that it is aware that if notice terminating this bond is issued prior to the Crown receiving substitute Financial Assurance satisfactory to it, the Crown is entitled to convert this bond into cash to be held in the Consolidated Revenue Fund as financial assurance and that the Crown may obtain a lien against affected property in priority to other liens and charges in the event of a default with respect to such property under the *Environmental Protection Act* or the *Ontario Water Resources Act* by the Principal or its successors.

IN WITNESS WHEREOF this bond has been duly signed, sealed and delivered.

Legal Name of Surety

per: \_\_\_\_\_ c/s

Legal name(s) of Principal

per: \_\_\_\_\_

(Use appropriate style of signature depending on whether individual, sole proprietor, partnership or corporation)

NB: Change words in brackets to fit circumstances. The "Ontario Water Resources Act" should be added for OWRA orders and approvals.





DRAFT FORM OF IRREVOCABLE LETTER OF CREDIT  
TO BE TYPED ON BANK LETTERHEAD

Her Majesty the Queen in Right of Ontario  
as Represented by the Minister of Environment & Energy

We hereby authorize you to draw on the \_\_\_\_\_ [Name of

Bank] *[must be an Ontario Branch]* for account of *[Company's name]*

\_\_\_\_\_ *[Address]* \_\_\_\_\_

Ontario, an aggregate amount of

\_\_\_\_\_ (\$ \_\_\_\_\_) of

lawful money of Canada available by demand.

Pursuant to the request of our customer, \_\_\_\_\_, we hereby establish and give to you an Irrevocable Letter of Credit in your favour which may be drawn on by you at any time and from time to time upon written demand for payment made upon us by you, which demand we shall honour without enquiring whether you have a right as between yourself and our said customer to make such demands, and without recognizing any claim of our said customer. This Irrevocable Letter of Credit will continue up to \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_, and will be automatically renewed for one year on the same terms and conditions (including this one for renewal) unless we give you at least 60 days' written notice that it will not be so renewed and you may call for payment on the full amount outstanding under this Irrevocable Letter of Credit at any time prior to that date should this Irrevocable Letter of Credit not be renewed.

Partial drawings are permitted.

Any payment made hereunder shall be in favour of the Minister of Finance of Ontario.

The amount secured by this Irrevocable Letter of Credit may be reduced from time to time by written notice to the Bank from you.

Any notice under the previous paragraph or any demand hereunder may be made by you or by the Assistant Deputy Minister, Operations Division; the Assistant Deputy Minister, Corporate Management Division; *[other appropriate MOEE official's title supplied by MOEE]* or such other Director as you from time to time authorize in writing.

Your claim under this Irrevocable Letter of Credit must be in writing addressed to the \_\_\_\_\_  
 \_\_\_\_\_ [*insert name and address of issuing Bank* ], Ontario or its main branch in  
 Toronto, Ontario quoting our Irrevocable Letter of Credit # \_\_\_\_\_ dated  
 \_\_\_\_\_ 19 \_\_\_\_\*.

We hereby agree with you that demands made in compliance with the terms of this credit shall be duly honoured upon presentation at the Bank.

\_\_\_\_\_  
 Authorized Signing Officers

\*optional addition - and shall be accompanied by a written statement that the monies are required in connection with provisional certificate of approval number \_\_\_\_\_. This would be varied to meet the circumstances, for example it may be a waste management system or waste disposal site related to that approval or an order or a contract that should be referred to.

Note, unless the credit is for a short period and is not expressed to be renewable the approval, order or contract must specify that in the event notice of non renewal or termination of the security is received the security must be immediately replaced by cash. This will ensure that the MOEE can draw on the letter of credit or other form of financial assurance if notice is received when security is still needed and arrangements have not been made to replace it with other security.

## **4.O SUMMARY OF FINANCIAL ASSURANCE ACCOUNTS**





# 4.0 SUMMARY OF FINANCIAL ASSURANCE ACCOUNTS

	AS OF JUNE 1990		AS OF MARCH 1993		AS OF MARCH 1995		AS OF MARCH 1996	
Total number of FA accounts	110	100%	295	100%	409 <sup>(1)</sup>	100%	496 <sup>(1)</sup>	100%
Cash	16	14%	69	23%	64	16%	84	17%
Letter of credit	90	82%	215	73%	268	66%	328	67%
Surety/performance bonds	4	4%	11	4%	75 <sup>(2)</sup>	18%	79 <sup>(2)</sup>	16%
Number of corporations, firms and proprietors who provided FA		79		197		313		376
Median dollar value		\$30,000		\$25,000 <sup>(3)</sup>		\$25,000 <sup>(3)</sup>		\$25,000 <sup>(3)</sup>
Mean dollar value		\$244,914		\$125,880 <sup>(3)</sup>		\$119,616 <sup>(3)</sup>		\$101,533 <sup>(3)</sup>
Lowest FA account value		\$3,140		\$1,000 <sup>(3)</sup>		\$147 <sup>(3)</sup>		\$147 <sup>(3)</sup>
Highest FA account value		\$10,200,000		\$5,000,000 <sup>(3)</sup>		\$5,023,000 <sup>(3)</sup>		\$3,187,700 <sup>(3)</sup>
Total FA dollar value		N/A		\$37,008,633 <sup>(3)</sup>		\$48,444,462 <sup>(3)</sup>		\$49,345,122 <sup>(3)</sup>

N/A: Not Available

<sup>(1)</sup> Information relating to the type of financial instruments used was not recorded for two out of the 409 accounts in 1995 and five out of the 496 accounts in 1996.

<sup>(2)</sup> The surety bond accounts are the total sum of the following accounts for 1995:

Five Indemnification Agreements (AGR), thirty-four Guaranteed Bonds (GB), one Canada Savings Bond (CSB), one Certificate of Insurance (CI), one Guaranteed Investment Certificate (GIC), one License Bond (LB), twenty-one Letter of Guarantee (LG), ten Performance Bonds (PB) and one Treasury Bill (TB)

The surety bond accounts are the total sum of the following accounts for 1996:

Five Indemnification Agreements (AGR), forty Guaranteed Bonds (GB), four Guaranteed Investment Certificate (GIC), one License Bond (LB), nineteen Letters of Guarantee (LG), nine Performance Bonds (PB), and one Treasury Bill (TB)

<sup>(3)</sup> As of 1993, one account was listed with a zero balance, as of 1995, three accounts were listed with zero balances and as of 1996, ten accounts were listed with zero balances. These accounts were omitted from the statistical calculations and in defining the high/low values.

Source: Economic Services Branch, Ontario Ministry of Environment and Energy.

## 5.0 CALCULATING FINANCIAL ASSURANCE AMOUNTS FOR A LANDFILL SITE

---

In this section, an example showing how financial assurance is estimated for a private landfill operation is presented. Lotus 1-2-3 spreadsheets have been developed to help to calculate these amounts.

Financial assurance for a landfill site is intended to provide funds for:

1. Planned closure of the site when the landfill capacity is exhausted.
2. Treatment of leachate, now or in the future, if necessary.
3. Emergency closure of the site (i.e. the owner goes bankrupt; environmental damages from the site are higher).

As noted in the guidelines, the amount of financial assurance to be given must be sufficient to pay the total capital costs of all planned and emergency closure activities plus the costs of post-closure operating, maintenance and monitoring in perpetuity.

In this example, relevant closure and post-closure care activities are listed in Table 1 along with the estimated one-time capital or annual operating costs for each activity. Other relevant variables needed for these calculations (i.e. area of landfill site, contingency charges, annual amount of solid wastes disposed of each year, inflation and discount rates, etc.) are also presented. Values for each variable are given in Table 1. Additional activities and capital items can also be added to each spreadsheet.

Estimates of costs for each closure and post-closure item should be provided by the regulated parties (firms or individuals) who are recipients of orders or approvals. MOEE officials should review these estimates or generate estimates themselves if they are not forthcoming from regulated parties or proponents.

Table 2 contains a listing of each planned closure and post-closure cost item to be incurred in each year starting from the year in which the site is intended to close (1997 in this example). These costs are then summed across rows to show first, the total costs annually and, second, the present value of these total costs.

Costs for each item are inflated each year by the inflation rate specified in Table 1. Inflation and discount rate values used in this example are 3.5 percent and 6.0 percent. Inflation rate and discount rate values can be changed as required.



Present values are calculated using the Lotus "@PV" function and the discount rate specified in Table 1.

In this example, planned closure costs shown for 1997 are inflated from initial 1992 values.

Annual present values are summed in Table 2 over the period of years defined for the case in point (in this case, from 1997 to 2021) to yield \$498,098. The total present value over the study period (as shown in the lower right-hand corner of the table) is the total amount of funds that would have to be accumulated **at the end** of 24 years to pay the planned closure costs and future post-closure perpetual care activities. These funds may be accumulated if the proponent pays an annual fixed amount or a charge per unit of solid waste deposited each year into the financial assurance account. Part of the money accumulated will be interest earned at rates defined in Section 7 of the guidelines.

Table 3 contains estimates of emergency closure and post-closure cost items. In this example, Emergency Closure activities and their costs are identical to planned closure activities and costs displayed in Table 2. However, **emergency closure** could occur in any year after the opening of the site. Total funds required, in current and present value terms, are summed up in the right-hand columns of Table 3. **The total present value over the period** (shown in the lower right-hand corner of the table) **would be** the amount of financial assurance required at the **outset** of the landfill site operation.

Note that the number of **different closure** and post-closure activities in Tables 2 and 3 may be increased or decreased as **needed by the user**.

Table 4 presents an elaboration of **the provision** of accumulated financial assurance payments over time. Two alternative **payment schedules** intended to accumulate the same amount of money for planned closure and **post-closure** activities are presented. One approach is to assess charge rates per tonne that **vary from year to year**; the other is to charge the same amount each year, but not based on the **amount of waste deposited**. Under both payment schedules, the same total amount of money should be assembled, \$498,098.

The purpose of financial assurance is to ensure that funds are available for emergency closure from the time the site opens and begins operating. The amount of financial assurance for emergency closure is determined in Table 3 and may be given as cash, letter of credit, surety bond, etc. As funds are accumulated from annual payments into a fund for planned closure and other post-closure activities (e.g. leachate treatment), the financial assurance held for emergency closure may be reduced.



TABLE 1: CLOSURE AND POST CLOSURE ACTIVITIES AND COSTS

ACTIVITY NUMBER	ESTIMATED COST	PAYMENT PERIOD	CLOSURE AND LONG-TERM MAINTENANCE ACTIVITIES
1	\$1,000	One-time payment	Clean up of litter, debris on and around site
2	\$1,000	One-time payment	Repair of leachate seeps
3	\$17,500	one-time payment (per hectare)	Final cover application
4	\$5,000	one-time payment (per hectare)	Topsoil application
5	\$3,000	one-time payment (per hectare)	Seeding finished areas
6	\$1,200	One-time payment	Drainage ditch construction
7	\$10,000	One-time payment	Tree and Shrub planting
8	\$10,000	Annual payment	Site inspections and routine maintenance
9	\$6,500	Annual payment	Water monitoring, lab analyses, report preparation
10	\$1,000	Annual payment	Repair of defective monitoring wells
11	\$15,000	One-time payment	Replace/repair of monitoring wells
	2	hectares	Site size requiring final cover application and seeding of finished areas.
	1.5	hectares	Site size requiring topsoil application.
	15%	percentage One-time payment	Contingency
	3,356	tonnes/year	Quatity of waste accepted at site per annum
	1	phases	Number of phases over which the site will be used. (Note: each phase is a complete and separate entity)
	3.5%	percentage	INFLATION RATE
	6.0%	percentage	INTEREST (DISCOUNT) RATE

TABLE 2: PLANNED CLOSURE AND POST-CLOSURE COSTS

PLANNED CLOSURE AND POST-CLOSURE ITEMS (Estimated cost in 1992 dollars)												TOTAL ANNUAL PLANNED CLOSURE AND POST-CLOSURE COSTS	
ITEM:	1	2	3	4	5	6	7	Contingency	8	9	10		11
	1,000	1,000	17,500 per hectare	5,000 per hectare	3,000 per hectare	1,200	10,000	15%	10,000	6,500	1,000		15,000
One-time Payment:													
Annual Payments:													
ANTICIPATED PAYMENT SCHEDULE (Amounts in current dollars)													
YEAR	1	2	3	4	5	6	7	Contingency	8	9	10	11	
1992	1,188	1,188	41,569	8,908	7,126	1,425	11,877	10,992	11,877	7,720	1,188	17,815	
1993									12,293	7,990	1,229		
1994									12,723	8,270	1,272		
1995									13,168	8,559	1,317		
1996									13,629	8,859	1,363		
1997									14,106	9,169	1,411		
1998									14,600	9,490	1,460		
1999									15,111	9,822	1,511		
2000									15,640	10,166	1,564		
2001									16,187	10,522	1,619		
2002									16,753	10,890	1,675		
2003									17,340	11,271	1,734		
2004									17,947	11,665	1,795		
2005									18,575	12,074	1,857		
2006									19,225	12,496	1,923		
2007									19,898	12,934	1,990		
2008									20,594	13,386	2,059		
2009									21,315	13,855	2,132		
2010									22,061	14,340	2,206		
2011									22,833	14,842	2,283		
2012									23,632	15,361	2,363		
2013									24,460	15,899	2,446		
2014									25,316	16,455	2,532		
2015									26,202	17,031	2,620		
2016									27,119	17,627	2,712		
2017													
2018													
2019													
2020													
2021													

## Note:

1. Inflation is assumed to be constant at an annual rate of 3.5%
2. Interest is assumed to be constant at an annual rate of 6%
3. Each scheduled payment is determined from the corresponding 1992 payment by adjusting for inflation

TABLE 3: EMERGENCY CLOSURE AND POST-CLOSURE COSTS AND FINANCIAL ASSURANCE

EMERGENCY CLOSURE AND POST-CLOSURE ITEMS (Estimated cost in 1992 dollars)												TOTAL ANNUAL EMERGENCY CLOSURE COSTS	
ITEM:	1	2	3	4	5	6	7	Contingency	8	9	10	11	PRESENT VALUE OF TOTAL EXPENSES
One-time Payment:	1,000	1,000	17,500	5,000	3,000	1,200	10,000	15%	10,000	6,500	1,000	15,000	
Annual Payment:													
ANTICIPATED PAYMENT SCHEDULE (Amounts in current dollars)												TOTAL EXPENSES (Row Sum)	1992 \$:
YEAR	1	2	3	4	5	6	7	Contingency	8	9	10	11	CURRENT \$:
0													
1992	1,000	1,000	35,000	7,500	6,000	1,200	10,000	9255	10,000	6,500	1,000	15,000	103,455
1993									10,350	6,728	1,035		17,087
1994									10,712	6,963	1,071		18,746
1995									11,067	7,207	1,109		19,403
1996									11,475	7,459	1,148		20,082
1997									11,877	7,720	1,188		20,785
1998									12,293	7,990	1,229		21,512
1999									12,723	8,270	1,272		22,265
2000									13,168	8,559	1,317		23,044
2001									13,629	8,859	1,363		23,851
2002									14,106	9,169	1,411		24,685
2003									14,600	9,490	1,460		25,549
2004									15,111	9,822	1,511		26,444
2005									15,640	10,166	1,564		27,369
2006									16,187	10,522	1,619		28,327
2007									16,753	10,890	1,675		29,319
2008									17,340	11,271	1,734		30,345
2009									17,947	11,665	1,795		31,407
2010									18,575	12,074	1,857		32,506
2011									19,225	12,496	1,923		33,644
2012									19,898	12,934	1,990		34,821
2013									20,594	13,386	2,059		36,040
2014									21,315	13,855	2,132		37,301
2015									22,061	14,340	2,206		38,607
2016									22,833	14,842	2,283		39,958
TOTAL PRESENT VALUE IN 1992 DOLLARS:													\$419,385
TOTAL FINANCIAL ASSURANCE REQUIRED IN 1992 FOR EMERGENCY CLOSURE (*)													\$419,385

(\*) The amount of financial assurance required for emergency closure in subsequent years is assumed to increase at the rate of inflation

## Note:

1. Inflation is assumed to be constant at an annual rate of 3.5%
2. Interest is assumed to be constant at an annual rate of 6%
3. Each scheduled payment is determined from the corresponding 1992 payment by adjusting for inflation

**TABLE 4: ALTERNATIVE SCHEDULES FOR THE PROVISION OF FINANCIAL ASSURANCE  
THROUGH ANNUAL CHARGES TO COVER PLANNED CLOSURE AND POST CLOSURE COSTS**

FULL FUNDING AT CLOSURE													
YEAR	COLUMN A		Amount Required in Various Years for Emergency Close-Out(*)	Lumpsum* Letter of Credit	Variable Per Tonne Rate			Constant per Tonne Rate			Amount to be included in a Line of Credit to cover Emergency Closure		
	Present Value in Various years of Amount for Planned 1997 Close-Out (#)	Amount Required in Various Years for Emergency Close-Out(*)			Beginning of Year Balance	Accrued During Year	Rate per Tonne	Beginning of Year Balance	Accrued During Year	Rate per Tonne			
1992 1	372,208	419,385		\$47,177	\$0	\$65,794	\$19.60	\$419,385	\$0	\$71,409	\$21.28	\$419,385	
1993 2	394,541	434,064		\$39,523	\$65,794	\$72,045	\$20.29	\$368,270	\$71,409	\$75,693	\$21.28	\$362,655	
1994 3	418,213	449,256		\$31,043	\$137,839	\$78,751	\$21.00	\$311,417	\$147,102	\$80,235	\$21.28	\$302,154	
1995 4	443,306	464,980		\$21,674	\$216,589	\$85,942	\$21.74	\$248,391	\$227,337	\$85,049	\$21.28	\$237,644	
1996 5	469,904	481,254		\$11,350	\$302,532	\$93,652	\$22.50	\$178,723	\$312,385	\$90,152	\$21.28	\$168,869	
1997 6	498,098	498,098		\$0	\$396,184	\$101,914	\$23.28	\$101,914	\$402,537	\$95,561	\$21.28	\$95,561	
1998 7	0	0		\$0	\$498,098				\$498,098				
1999 8	0	0		\$0									
2000 9	0	0		\$0									
2001 10	0	0		\$0									
2002 11	0	0		\$0									
2003 12	0	0		\$0									
2004 13	0	0		\$0									
2005 14	0	0		\$0									
2006 15	0	0		\$0									
2007 16	0	0		\$0									
2008 17	0	0		\$0									
2009 18	0	0		\$0									
2010 19	0	0		\$0									
2011 20	0	0		\$0									
2012 21	0	0		\$0									
2013 22	0	0		\$0									

Notes:

1. Inflation is assumed to be constant at an annual rate of 3.5%
2. Interest is assumed to be constant at an annual rate of 6%
3. The rate of site use is assumed to be constant at 3.36 tonnes per year, for 5 (4/4) years
4. The Beginning of Year Balance equals the Balance from the previous year plus accrued interest plus the funds accrued during the previous year

(\*) Planned 1997 close-out amount as derived in Table 2; amounts for previous years adjusted for assumed rate of interest

(\*\*) Emergency close-out for 1992 as derived in Table 3; amounts for subsequent years adjusted for the assumed rate of inflation

For Full Funding at Closure, an Irrevocable Letter of Credit may be arranged for the difference between the required amount for that year (from column A) and the Beginning of Year Balance, so that 100% assurance is provided.

Note:

1. Inflation is assumed to be constant at an annual rate of 3.5%
  2. Interest is assumed to be constant at an annual rate of 6%
  3. The rate of site use is assumed to be constant at 3.56 tonnes per year, for 5 (4A) years
  4. The Beginning of Year Balance equals the Balance from the previous year plus accrued interest plus the funds accrued during the previous year (#) Planned 1997 close-out amount as derived in Table 2, amounts for previous years adjusted for assumed rate of interest
  - (\*) Emergency close-out for 1992 as derived in Table 3; amounts for subsequent years adjusted for the assumed rate of inflation
- For Full Funding at Closure, an Irrevocable Letter of Credit may be arranged for the difference between the required amount for that year (from column A) and the Beginning of Year Balance, so that 100% assurance is provided.



## 6.O UNIT COSTS OF EMERGENCY AND PLANNED CLOSURE OF LANDFILLS

---

The two tables shown in this section summarize unit and total costs of emergency and planned closure activities and cost items for landfill sites in Ontario. Post-closure maintenance, monitoring and contingency costs are also shown.

These costs are summarized from certificate of approval files of the Ministry of Environment and Energy and represent cost estimates reported for specific landfill operations in Ontario and used to establish financial assurance amounts. Eight different landfill sites are noted in these tables. Gore landfill is represented in both tables.

In each case, the sizes of the landfill sites (in hectares) are shown. For some of the sites, the area for which closure and post-closure maintenance costs are estimated is given.

For purposes of determining financial assurance for emergency or planned closure, only the area of the landfill that is in operation at the time of closure would have to be worked on. Therefore, costs of closure may be based only on the area to be closed, not the whole landfill site. In some of the certificate of approval files, it is not clear just how much area is to be closed.

As a rule of thumb, up to one-third of the full area of a landfill site will be operating at any point in time.

COST ITEMS AND UNIT COSTS FOR LANDFILL EMERGENCY CLOSURE AND POST CLOSURE MAINTENANCE						
ACTIVITIES	UNIT COST	LANDFILL OPERATIONS				
		LASCO Automobile Shredder By-Product Berm Landfill(1)	Gore Landfill(2)	Unitec Disposals Landfill(3)	Green Lane Landfill(4)	
LANDFILL AREA		16 ha	9.35 ha	24.5 ha	20.6 ha	
AREA TO BE CLOSED (REQUIRES FINANCIAL ASSURANCE)						
Emergency Closure Capital Costs						
Precompaction, grading of landfill surface	\$/m2				2	
Earth cover placement from stockpile	\$/m3	5		3.6	5	
Topsoil cover from stockpile	\$/m3	7		2.7	1.5	
Seed and mulch	\$/m2			0.5		
Surface water controls regrading, swale construction	\$Lump Sum				5,000	
Fill-in leachate collection and drainage pond	\$/m3	5				
Topsoil cover on leachate collection and drainage pond	\$/m3	7				
Install leachate collection and inspection manholes	\$/Manhole	2,000				
Install leachate drain to collection pond or pumping station	\$/m	50				
Leachate collection system	\$/m				75	
Installation of leachate monitoring well	\$Lump Sum				3,000	
Seeding of disturbed area	\$/m2	0.6			0.5	
Infilling of low lying areas	\$/m3				5	

TABLE 1

COST ITEMS AND UNIT COSTS FOR LANDFILL EMERGENCY CLOSURE AND POST CLOSURE MAINTENANCE						
ACTIVITIES	UNIT COST	LANDFILL OPERATIONS				
		LASCO Automobile Shredder By-Product Berm Landfill(1)	Gore Landfill(2)	Unitec Disposals Landfill(3)	Green Lane Landfill(4)	
LANDFILL AREA		16 ha	9.35 ha	24.5 ha	20.6 ha	
AREA TO BE CLOSED (REQUIRES FINANCIAL ASSURANCE)			3.1 ha			
Planting of trees an shrubs	\$Total	2,910				
Engineering costs (design, approvals of certification)	\$Total					(15% of total Emergency Costs)
Post-Closure Annual Operation and Maintenance Costs						
Labour-spray irrigation of leachate	\$/Year			30,000		
Maintenance, cap and equipment repair	\$/Year			10,000		
Cap repair	\$/Hour		50			
Hydro	\$/Year			3,000		
Maintenance grounds (grass cutting, fence repair, etc.)	\$/Year			5,000		
Grass cutting	\$/Hour		40			
Access road repair and snow removal	\$/Hour		75			
Monitoring	\$/Year			15,000		
Hydrogeological report	\$Total			10,000		
Leachate collection system maintenance using berm maintenance equipment	\$/Hour	25				
Materials and allowance for replacement of pumps and equipment	\$Total/Year	9,600				
Leachate collection and trucking	\$Lump Sum/Year					73,000



COST ITEMS AND UNIT COSTS FOR LANDFILL EMERGENCY CLOSURE AND POST CLOSURE MAINTENANCE						
ACTIVITIES	UNIT COST	LANDFILL OPERATIONS				
		LASCO Automobile Shredder By-Product Berm Landfill(1)	Gore Landfill(2)	Unitec Disposals Landfill(3)	Green Lane Landfill(4)	
LANDFILL AREA		16 ha	9.35 ha	24.5 ha	20.6 ha	
AREA TO BE CLOSED (REQUIRES FINANCIAL ASSURANCE)			3.1 ha			
Leachate disposal to sanitary sewer	\$/m3/Year	0.5				
Leachate disposal charges	\$Lump Sum/Year					64,000
Leachate testing, sampling and analyzing	\$/Test	1,000				
Cleaning of leachate collection system	\$Lump Sum/Year					1,000
Slope maintenance 2% of area after closure of landfill	\$/m2					4
Reporting cost	\$Total/Year	4,000				10,000
Long-term surface, groundwater and gas monitoring	\$/Year	20,000				
Analytical costs for groundwater samples	\$/Location					375
Analytical costs for surfacewater and leachate samples	\$/Location					425
Analytical costs for gas	\$/Location					600
Collection of samples	\$Lump Sum/Year					2,000
Monitoring well maintenance	\$Lump Sum/Year					3,000
Maintenance of the stormwater management facilities	\$Lump Sum/Year					1,000



TABLE 1

COST ITEMS AND UNIT COSTS FOR LANDFILL EMERGENCY CLOSURE AND POST CLOSURE MAINTENANCE						
ACTIVITIES	UNIT COST	LANDFILL OPERATIONS				
		LASCO Automobile Shredder By-Product Berm Landfill(1)	Gore Landfill(2)	Unitec Disposals Landfill(3)	Green Lane Landfill(4)	
LANDFILL AREA		16 ha	9.35 ha	24.5 ha	20.6 ha	
AREA TO BE CLOSED (REQUIRES FINANCIAL ASSURANCE)			3.1 ha			
Non-Routine Maintenance:						
Spring and fall erosion maintenance	\$/Hour	141				
Maintenance of trees and shrubs	\$Allowance /Year	5,000				
Clear out and maintenance of ditches and grassed surfaces with gradall and truck	\$/Hour	139.2				
Maintain and replace culverts, outlet structures and fences	\$Allowance /Year	15,000				
Maintain storm water management ponds with gradall and truck	\$/Hour	139.2				
Contingencies and sundry	\$Total	(18% of Total Non-Routine Maintenance)				
Taxes	\$Total	3,500				
Provide security and regular inspection, grass cutting, etc. (Routine Maintenance):						
Payroll cost	\$Total/Year	20,000				
Replacement of mowing equipment	\$/Replacement	2,000				
Disposables: gas, seed, topsoil	\$Total/Year	4,500				

COST ITEMS AND UNIT COSTS FOR LANDFILL EMERGENCY CLOSURE AND POST CLOSURE MAINTENANCE						
ACTIVITIES	UNIT COST	LANDFILL OPERATIONS				
		LASCO Automobile Shredder By-Product Berm Landfill(1)	Gore Landfill(2)	Unitec Disposals Landfill(3)	Green Lane Landfill(4)	
LANDFILL AREA		16 ha	9.35 ha	24.5 ha	20.6 ha	
AREA TO BE CLOSED (REQUIRES FINANCIAL ASSURANCE)			3.1 ha			
Contingency Costs Capital Costs						
Removal of fuel tanks, decommissioning of soils around tanks, decommissioning of the scale facilities, construction of permanent gate facilities and fencing	\$Total		41,500			
Trenching in stiff silty clay without trench access by construction personnel	\$/m3	30				
HITEK or equivalent drain in bottom of trench	\$/m2	25				
Granular C sand backfill	\$/t	20				
Earth backfill	\$/m3	10				
Collection maintenance and access manholes	\$/Manhole	840				
Pump installation in manholes including collection sumps	\$/Pump	16,700				
Secondary leachate collection pond	\$/m3	6				
Pond liner	\$/m2	20				
Electrical feeds to pump manholes	\$/Manhole	5,000				
Interconnection between berm trench leachate connection system and pump chambers for perimeter drain	\$/m	100				
Restoration of roadways, ditches, fences and disturbed areas	\$Total	60,000				

TABLE 1

COST ITEMS AND UNIT COSTS FOR LANDFILL EMERGENCY CLOSURE AND POST CLOSURE MAINTENANCE						
ACTIVITIES	UNIT COST	LANDFILL OPERATIONS				
		LASCO Automobile Shredder By-Product Berm Landfill(1)	Gore Landfill(2)	Unitec Disposals Landfill(3)	Green Lane Landfill(4)	
LANDFILL AREA		16 ha	9.35 ha	24.5 ha	20.6 ha	
AREA TO BE CLOSED (REQUIRES FINANCIAL ASSURANCE)						
Engineering, contingencies and sundry	\$Total	154,400(20% of est. construction costs)				
Taxes	\$Total	7%				
Installation of a cutoff trench	\$/m					300
Design and approval	\$Total					(15% of Installation Cost)
Installation of a contaminant wall	\$/m					11,000
Design and approval	\$Total					(15% of Installation Cost)
Conversion of leachate monitoring wells to pumping wells:						
Install 3 pumps including wiring	\$Lump Sum					20,000
Install gravity drain pipe	\$/m					62.5
Design and approval	\$Total					(15% of Installation Cost)
Install perimeter toe drain	\$/m					100
Design and approval	\$Total					(15% of Installation Cost)
Active gas collection system:						
Vertical extraction wells	\$Lump Sum					180,000
Piping, blower and flare system	\$Lump Sum					475,000
Design and approval	\$Total					(15% of Installation Cost)



COST ITEMS AND UNIT COSTS FOR LANDFILL EMERGENCY CLOSURE AND POST CLOSURE MAINTENANCE					
ACTIVITIES	UNIT COST	LANDFILL OPERATIONS			
		LASCO Automobile Shredder By-Product Berm Landfill(1)	Gore Landfill(2)	Unitec Disposals Landfill(3)	Green Lane Landfill(4)
LANDFILL AREA		16 ha	9.35 ha	24.5 ha	20.6 ha
AREA TO BE CLOSED (REQUIRES FINANCIAL ASSURANCE)			3.1 ha		
Contingency Costs Operating and Maintenance Costs					
Cutoff Trench:					
Leachate disposal charges	\$Lump Sum/Year				700
Operating and maintenance costs	\$Lump Sum/Year				1,000
Conversion of leachate wells to pumping wells	\$Lump Sum/Year				1,000
Perimeter toe drain	\$Lump Sum/Year				1,000
Active gas collection system	\$Lump Sum/Year				12,500
SOURCE:					
(1) Totten Sims Hubicki Associates Ltd., LASCO, Hopkins Street South, Supplementary Report on financial assurance, Environmental Assessment, September 1992					
(2) Philip Environmental Inc. Memo dated April 1994, Re: Gore Sanitation Landfill, Provisional Certificate Of Approval, No. A021603, financial assurance Review					
(3) Unitec Disposals Inc. Memo dated August 1993.					
(4) Conestoga-Rovers & Associates, Financial Insurance for the Proposed Interim Expansion of the Green Lane Landfill, February 1993.					

**SOURCE:**

- (1) Totten Sims Hubicki Associates Ltd., LASCO, Hopkins Street South, Supplementary Report on financial assurance, Environmental Assessment, September 1992
- (2) Philip Environmental Inc. Memo dated April 1994, Re: Gore Sanitation Landfill, Provisional Certificate Of Approval, No. A021603, financial assurance Review
- (3) Unitec Disposals Inc. Memo dated August 1993.
- (4) Conestoga-Rovers & Associates, Financial Insurance for the Proposed Interim Expansion of the Green Lane Landfill, February 1993.



TABLE 2

T-8

COST ITEMS AND UNIT COSTS FOR LANDFILL PLANNED CLOSURE AND POST CLOSURE MAINTENANCE								
ACTIVITIES	UNIT COST	LANDFILL OPERATIONS					West Carleton Landfill(5)	
		Pedersen Landfill(1)	Ridge Landfill(2)	Gore Landfill(3)	Warwick Landfill(4)			
LANDFILL AREA		4.4 ha	48 ha	9.35 ha	32.4 ha	35 ha		
AREA TO BE CLOSED (REQUIRES FINANCIAL ASSURANCE)				3.1 ha		16 ha		
Planned Closure Cost Items								
Capping of old landfill	\$Total					529,200		
Clay for cover	\$/m3			3				
Sign replacement	\$Total		100					
Cleanup: litter, debris on and around site	\$Allowance	1,000						
Fuel tank removal	\$Total		27,200					
Removal of structures	\$Total				4,300	7,500		
Repair of leachate seeps	\$Allowance	1,000						
Final cap application	\$/ha	17,500	17,940					
Final cap application	\$Total				156,000	831,600		
Topsoil application	\$/ha	5,000						
Topsoil application	\$/m3			5				
Seeding finished areas	\$/ha	3,000	3,212					
Seeding finished areas	\$/m2			1				
Topsoil and seeding	\$Total				81,900	378,000		
Drainage ditch construction	\$/m	1.20						
Tree and shrub planting	\$Allowance	10,000						
Installation of observation wells	\$Total	15,000						

COST ITEMS AND UNIT COSTS FOR LANDFILL PLANNED CLOSURE AND POST CLOSURE MAINTENANCE

ACTIVITIES	UNIT COST	LANDFILL OPERATIONS				
		Pedersen Landfill(1)	Ridge Landfill(2)	Gore Landfill(3)	Warwick Landfill(4)	West Carleton Landfill(5)
LANDFILL AREA		4.4 ha	48 ha	9.35 ha	32.4 ha	35 ha
AREA TO BE CLOSED (REQUIRES FINANCIAL ASSURANCE)				3.1 ha		16 ha
Closure plan	\$Total				15,100	15,000
Repair access road	\$Total				8,000	12,000
Removal of sediment pond	\$Total				3,000	9,000
<b>Maintenance and Monitoring Costs</b>						
Cap and topsoil repairs	\$/Year				9,000	9,000
Cap repair	\$/Hour			50		
Erosion repair	\$/Occurrence		2,000			
Grass cutting	\$Total		10,200			
Grass cutting	\$/Year				1,600	3,000
Grass cutting	\$/Hour			40		
Ditch maintenance	\$/Occurrence		2,000			
Ditch maintenance	\$/Year				1,500	2,000
Leachate collector flushing	\$/Year				2,500	2,000
Semi annual inspections and routine maintenance	\$/Year	10,000				
Annual monitoring	\$/Year		71,000			
Site inspections	\$/Year		1,200			
Site inspections	\$/Inspection				500	1,500

TABLE 2

T-10

COST ITEMS AND UNIT COSTS FOR LANDFILL PLANNED CLOSURE AND POST CLOSURE MAINTENANCE						
ACTIVITIES	UNIT COST	LANDFILL OPERATIONS				
		Pedersen Landfill(1)	Ridge Landfill(2)	Gore Landfill(3)	Warwick Landfill(4)	West Carleton Landfill(5)
LANDFILL AREA		4.4 ha	48 ha	9.35 ha	32.4 ha	35 ha
AREA TO BE CLOSED (REQUIRES FINANCIAL ASSURANCE)				3.1 ha		16 ha
Annual water monitoring, laboratory analyses, report preparation	\$/Year	6,500				
Site surface maintenance	\$/Year		17,000			
Repair of defective monitoring wells	\$/Year	1,000				
Road granular (one-time cost in yr. 1998)	\$Total				6,500	
Road granular (one-time cost in yr. 2010)	\$Total					6,500
Access road repair and snow removal	\$/Hour			75		
Taxes	\$/Year				2,000	21,000
<b>Contingency Costs</b>						
All contingency costs	\$Total	9,255(15% of Closure Costs)				
Leachate treatment	\$/Gallon		0.01			
Leachate conveyance	\$/Tonne		3.80			
Leachate pre-treatment:						
Capital	\$Total				1,860,000	3,230,000
Operating	\$/Year				150,000	305,000
Leachate polishing:						
Capital	\$Total				97,500	
Operating	\$/Year				4,876	222,000



T-11

COST ITEMS AND UNIT COSTS FOR LANDFILL PLANNED CLOSURE AND POST CLOSURE MAINTENANCE						
ACTIVITIES	UNIT COST	LANDFILL OPERATIONS				
		Pedersen Landfill(1)	Ridge Landfill(2)	Gore Landfill(3)	Warwick Landfill(4)	West Carleton Landfill(5)
LANDFILL AREA		4.4 ha	48 ha	9.35 ha	32.4 ha	35 ha
AREA TO BE CLOSED (REQUIRES FINANCIAL ASSURANCE)				3.1 ha		16 ha
Trucking allowance	\$/Year				194,178	
Leachate purge wells:						
Capital	\$Total				756,000	400,000
Operating	\$/Year				84,000	38,500
Pumping station and forcemain:						
Capital	\$Total					2,500,000
Operating	\$/Year					27,800
Test wells	\$/Year				33,000-50,000	33,000-50,000
Well replacement	\$/Well				2,000	2,000
Replacement of fencing(one-time cost in yr. 2000)	\$Total				32,850	
Replacement of fencing(one-time cost in yr. 2007)	\$Total					130,000
SOURCE:						
(1) HCI Waste Plan: Development, Operations and Closure Plan, Pedersen Landfill Site, Township of Uxbridge, Regional Municipality of Durham, December 1992.						
(2) Browning-Ferris Industries Ltd. Memo dated October 1995, Re: Ridge Landfill Corporation, Provisional Certificate of Approval No. A021601, Condition No. 60						
(3) Philip Environmental Inc. Memos dated April and June 1994, Re: Gore Sanitation Landfill, Provisional Certificate Of Approval, No. A021603, financial assurance Review and Comments on the Review.						
(4) Henderson, Paddon Environmental Inc., Development and Operations Report, Laidlaw Waste Systems Ltd., Warwick Landfill Site, September 1994.						
(5) Henderson, Paddon Environmental Inc., Development and Operations Report, Laidlaw Waste Systems Ltd., West Carleton Landfill Site, December 1994.						







